

November 9, 2005

Mr. Floyd Wiggins  
Wiggins Enterprises, Inc.  
1370 Airport Boulevard  
Santa Rosa, CA 95403

**Re: Quarterly Groundwater Monitoring and Sampling Report – Third Quarter 2005,  
Wiggins Property, 3454 Santa Rosa Avenue, Santa Rosa, California, SCDHS-EHD  
Site # 00001849, NCRWQCB Site # 1TSR007**

Dear Mr. Wiggins:

This report presents Winzler & Kelly Consulting Engineers' (Winzler & Kelly's) results of the third quarter groundwater monitoring and sampling activities performed on August 9, 2005, at 3454 Santa Rosa Avenue (site), Santa Rosa, California (Figures 1 and 2). Winzler & Kelly performed the work in accordance with the April 18, 2005 letter from the Sonoma County Department of Health Services, Environmental Health Division (SCDHS-EHD), which requested quarterly monitoring and sampling of monitoring wells MW-5 through MW-9, MW-11, and MW-12, as well as sampling of domestic wells located in the vicinity of the site. This report also provides a brief update on the current site remedial activities.

#### **GROUNDWATER MONITORING AND SAMPLING ACTIVITIES**

The Site-Specific Sampling Procedures, provided in Appendix A, describe in detail all of the monitoring and sampling activities that were performed at the site on August 9, 2005. A brief summary of these activities is also provided below.

***Personnel Present:*** Winzler & Kelly's technicians, Pon Xayasaeng and Brian Bacciarini, performed the groundwater monitoring and sampling activities.

***Free-Product Monitoring:*** Prior to sampling activities, monitoring well MW-10 was evaluated for the presence of free product (petroleum hydrocarbons) using an oil/water interface probe. Additionally, a clear plastic bailer was used to visually confirm the presence of free product.

***Depth-to-Water:*** An electronic water level meter was used to measure the depth-to-groundwater (DTW) in each monitoring well while the ozone system was operating. DTW was measured in each well after

Mr. Floyd Wiggins  
November 9, 2005  
Page 2

allowing the groundwater to equilibrate to atmospheric pressure for approximately 30 minutes. An oil/water interface probe was used to measure DTW in monitoring well MW-10. DTW was measured to be 7.31 feet below ground surface (bgs). The oil/water interface probe did not detect free product in MW-10.

***Dissolved Oxygen:***

Following DTW measurements, a calibrated dissolved oxygen (DO) meter was used to measure the concentrations of DO in monitoring wells MW-5 through MW-9, MW-11, and MW-12.

***Purging:***

An electronic 12-volt submersible pump was used to purge each of the monitoring wells sampled until the indicator parameters of pH, conductivity, and temperature had stabilized.

Domestic wells were purged by running the tap closest to the well system's pressure tank until the well pump switched on.

***Monitoring Well Sampling:*** Groundwater samples were collected from monitoring wells MW-5 and MW-8 through MW-12. New disposable bailers were used to collect and transfer the groundwater samples from each monitoring well into the appropriate, laboratory-supplied, certified clean sample containers.

***Domestic Well Sampling:*** Prior to the groundwater sampling from domestic wells, well owners were notified of the sampling event. Groundwater samples were collected from the domestic wells located at 3415 (DW-3415), 3450 (DW-3450), 3455 (DW-3455), and 3521 (DW-3521) Santa Rosa Avenue.

***Chemical Analysis:*** Analytical Sciences Laboratory (Analytical Sciences) of Petaluma, California (a California-certified laboratory) analyzed each of the groundwater samples collected from the monitoring wells for total petroleum hydrocarbons as gasoline (TPH-G), as diesel (TPH-D), and as motor oil (TPH-MO) by EPA Method 8015M, and for benzene, toluene, ethyl benzene, and total xylenes (BTEX), acetone, and oxygenated fuel additives by EPA Method 8260B.

As part of the ozone remediation monitoring, groundwater samples were analyzed for hexavalent chromium ( $\text{Cr}^{+6}$ ) by EPA Method 7196A, for bromate ( $\text{BrO}_3^{-1}$ ) and bromide ( $\text{Br}^{-1}$ ) by EPA Method 300 (IC), and for molybdenum (Mo), selenium (Se), and vanadium (V) by EPA Method 6010 and 200.9.

Mr. Floyd Wiggins  
November 9, 2005  
Page 3

### **GROUNDWATER MONITORING AND SAMPLING RESULTS – AUGUST 9, 2005**

The groundwater elevation data and the direction and gradient of groundwater flow at the site are summarized in Tables 1 and 2, respectively. A groundwater contour map, provided as Figure 3, illustrates the groundwater elevation contours and flow direction at the site on August 9, 2005. As Figure 3 shows, the groundwater flow direction at the site was toward the southwest at an approximate gradient of 0.01 ft/ft.

During purging activities, the parameters of pH, conductivity, temperature, and oxidation-reduction potential were monitored in the groundwater extracted from the wells. A summary of these indicator parameters is provided in Table 3. In addition to monitoring the indicator parameters, MW-10 was monitored for the presence of free product. The previously installed hydrocarbon adsorbing, hydrophobic sock was removed and weighed. Approximately six ounces of absorbed free product was measured from the sock. An oil/water interface probe was then used to measure free product in MW-10. Free product was not detected using the oil/water interface probe. A measurable quantity of free product was not detected in any of the other monitoring wells that were sampled.

The laboratory analysis of the groundwater samples collected from monitoring wells MW-8, MW-9, MW-11, MW-12, and the domestic wells did not quantify any petroleum-related constituents above the laboratory's reportable detection limits (RDLs). Only the groundwater samples collected from monitoring wells MW-5 and MW-10 contained petroleum-related constituents above the laboratory's RDLs.

The analytical results of the groundwater samples are summarized in Table 4. Figure 4 depicts the concentrations of TPH-G, benzene, and methyl-tert butyl ether (MTBE) in the groundwater samples collected from the monitoring wells on August 9, 2005.

Additionally, groundwater samples collected from the monitoring wells MW-5 and MW-8 through MW-12 were analyzed for ozone oxidation/degradation by-product related constituents ( $\text{Cr}^{+6}$ ,  $\text{BrO}_3^{-1}$ , Mo, Se, and V). Analytical results did not quantify any of these constituents above the laboratory's RDLs. Table 5 presents the analytical results of the ozone sparging parameters.

Acetone was not detected in any of the groundwater samples.  $\text{Br}^{-1}$  was detected in all the wells sampled.  $\text{Br}^{-1}$  (a reduced form) is commonly found in groundwater, while  $\text{BrO}_3^{-1}$  is an oxidized form of  $\text{Br}^{-1}$  that can be found in association with the ozonation process. Ozone is not expected to begin significant oxidation of  $\text{Br}^{-1}$  until oxidation of petroleum hydrocarbons is substantially completed. The oxidation of  $\text{Br}^{-1}$  is said to be insignificant as long as oxidizable petroleum hydrocarbon concentrations are above 500  $\mu\text{g/L}$  (Source: Joan Brackin of T.A.O. Technologies, Inc.).

The laboratory QA/QC included the use of method blanks to exclude false-positive analyses and the use of laboratory control samples to evaluate the percentage recovery of known analyte

Mr. Floyd Wiggins  
November 9, 2005  
Page 4

spikes. The recovery percentages for all of the sample analytes were within acceptable ranges. The complete laboratory reports, QA/QC data, and the chain-of-custody form are included in Appendix B.

#### **STATUS OF REMEDIAL MEASURES**

On June 2 and 3, 2005, the ozone system unit was installed and started-up. An October 10, 2005 *Ozone Remedial System Installation and Start-up Report* was submitted to the client and SCDHS-EHD. Sparge points SP-1 through SP-6, SP-8, and SP-10 are currently in operation with the ozone system injection rate set at 1.2 pounds of ozone per day for the system. Each sparge point is receiving 0.15 pounds of ozone per day.

As of October 6, 2005, the ozone system has been operating as designed for approximately 123 days. A summary as of October 6, 2005, of the approximate mass of ozone injected into each sparge point is provided below.

Reagent	Injection Totals per Sparge Point	Operation Dates
Ozone	18.5 pounds	6/7/05 through 7/6/05* and 7/8/05 through 10/6/05
* Note: Ozone system was off from 7/6/05 to 7/8/05 due to high pressure alarm.		

A summary of the system operational hours is provided in Appendix C. A full summary and evaluation of the ozone system and operation and maintenance data will be provided in the annual report (November 2005 sampling event).

#### **GEOTRACKER DATA ENTRY**

As required by Assembly Bill AB2886, Winzler & Kelly has submitted the second quarter 2005 monitoring report, the analytical EDF reports from the ozone system installation, the analytical EDF reports and the groundwater well measurement file for the August 9, 2005 monitoring event to the GeoTracker database. Upload verification forms are included in Appendix D. Winzler & Kelly will submit this report to the GeoTracker database upon completion.

#### **RECOMMENDATIONS**

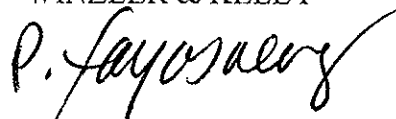
Winzler & Kelly recommends the continuation of quarterly groundwater monitoring and sampling at the site. As discussed in the October 10, 2005 *Ozone Remedial System Installation and Start-up Report*, the sampling schedule for each of the monitoring and domestic well at the site is summarized below.

Mr. Floyd Wiggins  
 November 9, 2005  
 Page 5

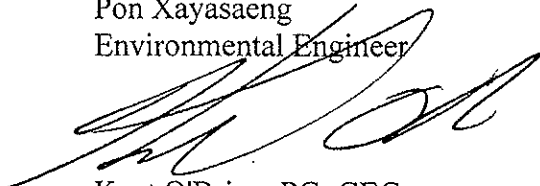
Well ID	Analysis					
	EPA 8015M	EPA 8260B	EPA 418.1M	Acetone, Cr <sup>+6</sup> , Mo, Se, V	Br <sup>-1</sup>	BrO <sub>3</sub> <sup>-1</sup>
MW-5	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly, then monthly if TPH-G ≤500µg/L	Quarterly, then monthly if TPH-G ≤500 µg/L
MW-6	Semi-Annually	Semi-Annually	Semi-Annually	Not Analyzed	Not Analyzed	Not Analyzed
MW-7	Semi-Annually	Semi-Annually	Semi-Annually	Not Analyzed	Not Analyzed	Not Analyzed
MW-8	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
MW-9	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
MW-10	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly, then monthly if TPH-G ≤500µg/L	Quarterly, then monthly if TPH-G ≤500 µg/L
MW-11	Quarterly	Quarterly	Quarterly	Annual	Annual	Annual
MW-12	Quarterly	Quarterly	Quarterly	Annual	Annual	Annual
DW-3415	Quarterly	Quarterly	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
DW-3450	Quarterly	Quarterly	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
DW-3455	Quarterly	Quarterly	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
DW-3521	Quarterly	Quarterly	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

The next monitoring and sampling event is schedule for November 2005. Should you have any questions or comments regarding this project, please contact David Vossler, Project Manager, at (707) 523-1010.

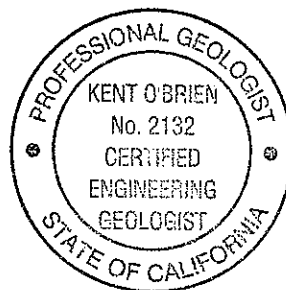
Sincerely,  
 WINZLER & KELLY



Pon Xayasaeng  
 Environmental Engineer



Kent O'Brien, PG, CEG  
 Senior Project Geologist



sc

Attachments:

Mr. Floyd Wiggins

November 9, 2005

Page 6

Figures:

Figure 1 – Location Map

Figure 2 – Site Map

Figure 3 – Groundwater Contour Map

Figure 4 – Petroleum Hydrocarbons in Groundwater

Tables:

Table 1 – Water Level Data

Table 2 – Groundwater Gradient and Flow Direction

Table 3 – Indicator Parameters

Table 4 – Analytical Results of Groundwater Samples

Table 5 – Additional Groundwater Analytical Results

Appendices:

Appendix A – Site-Specific Sampling Procedures

Appendix B – Analytical Laboratory Report

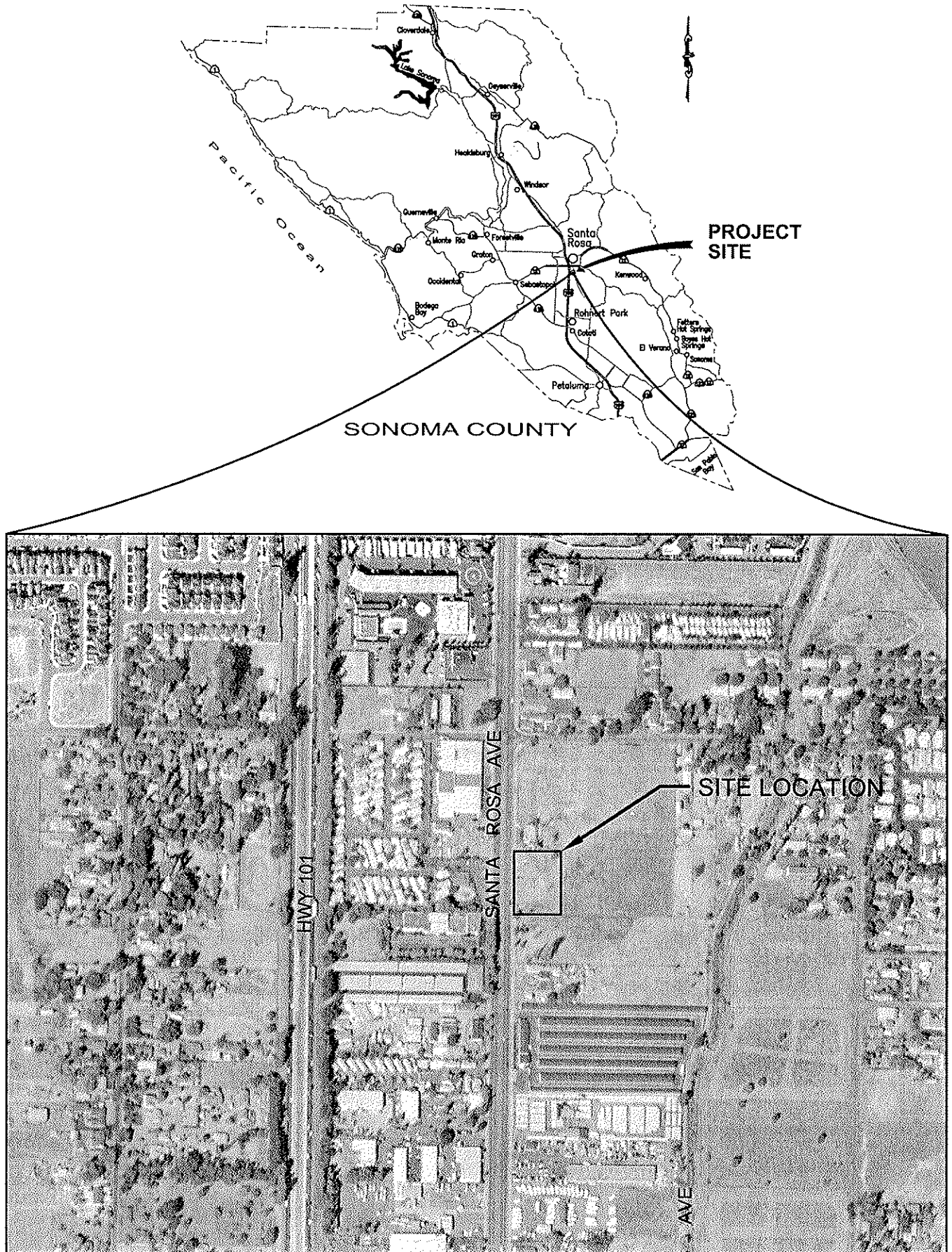
Appendix C – Operation and Maintenance Data

Appendix D – GeoTracker Upload Verifications

c: Mr. Cliff Ives, Sonoma County Department of Health Services, Environmental Health  
Division, 475 Aviation Blvd, Suite 220, Santa Rosa, CA 95403



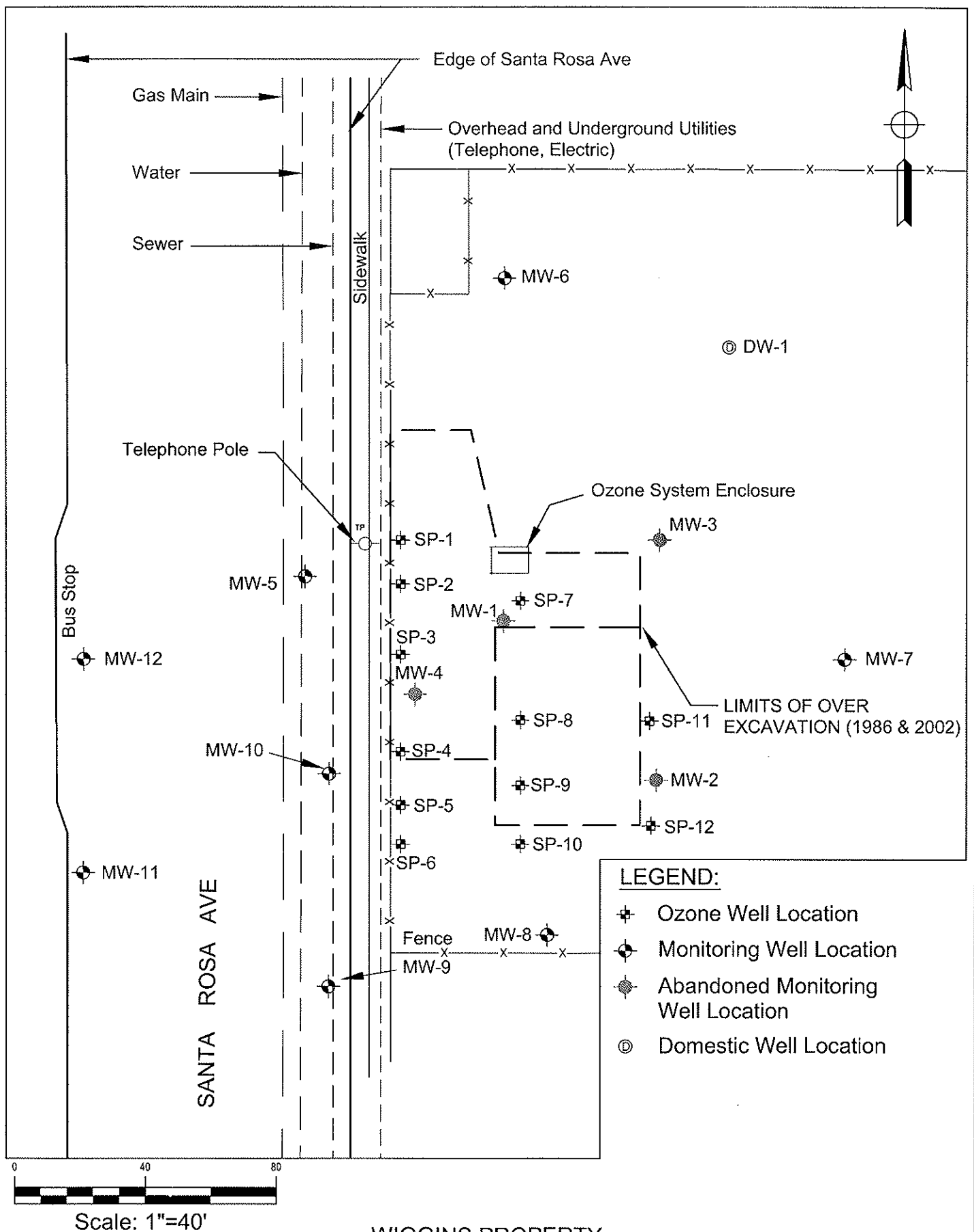




WIGGINS PROPERTY  
3454 Santa Rosa Ave  
Santa Rosa, California

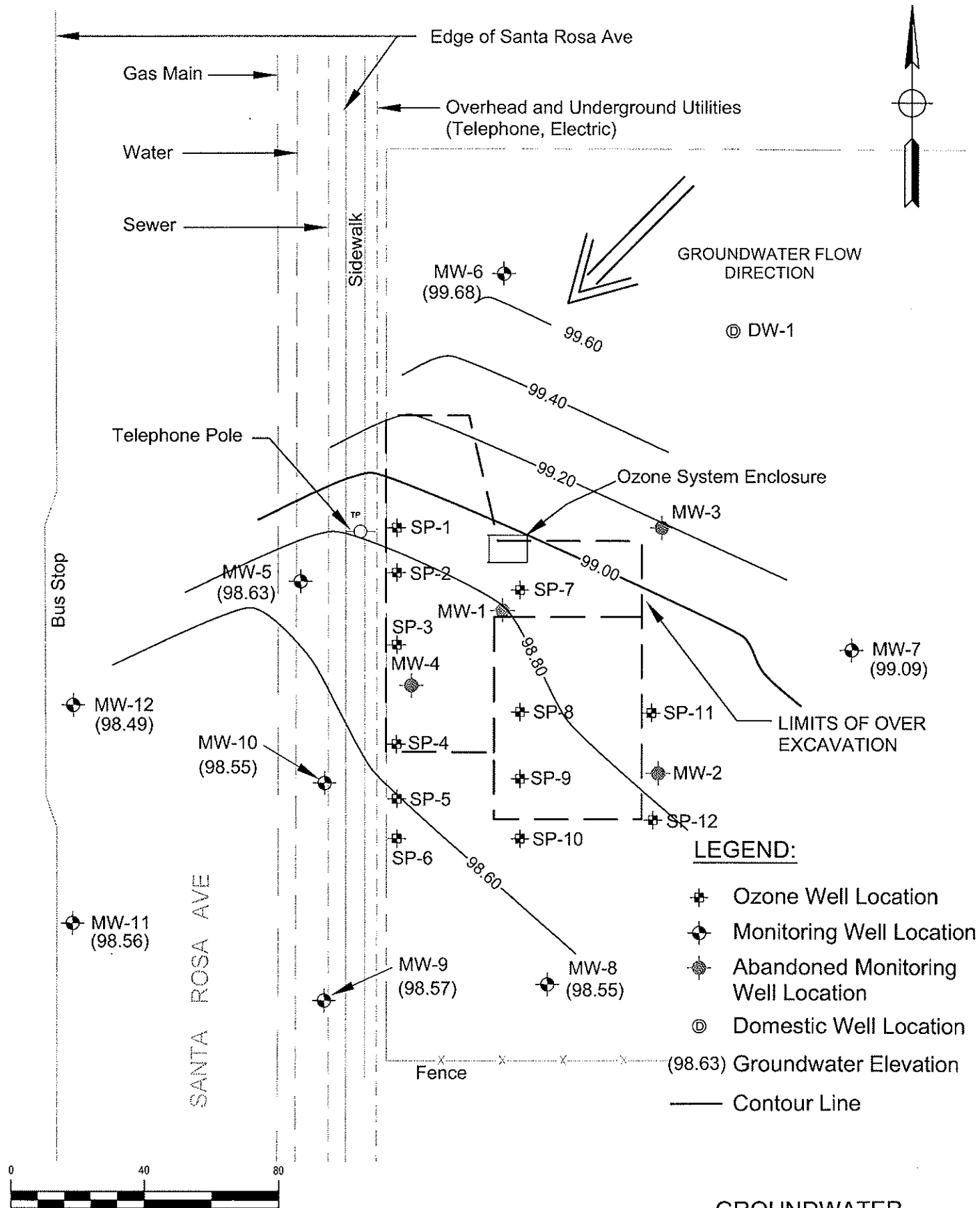
LOCATION MAP  
FIGURE 1





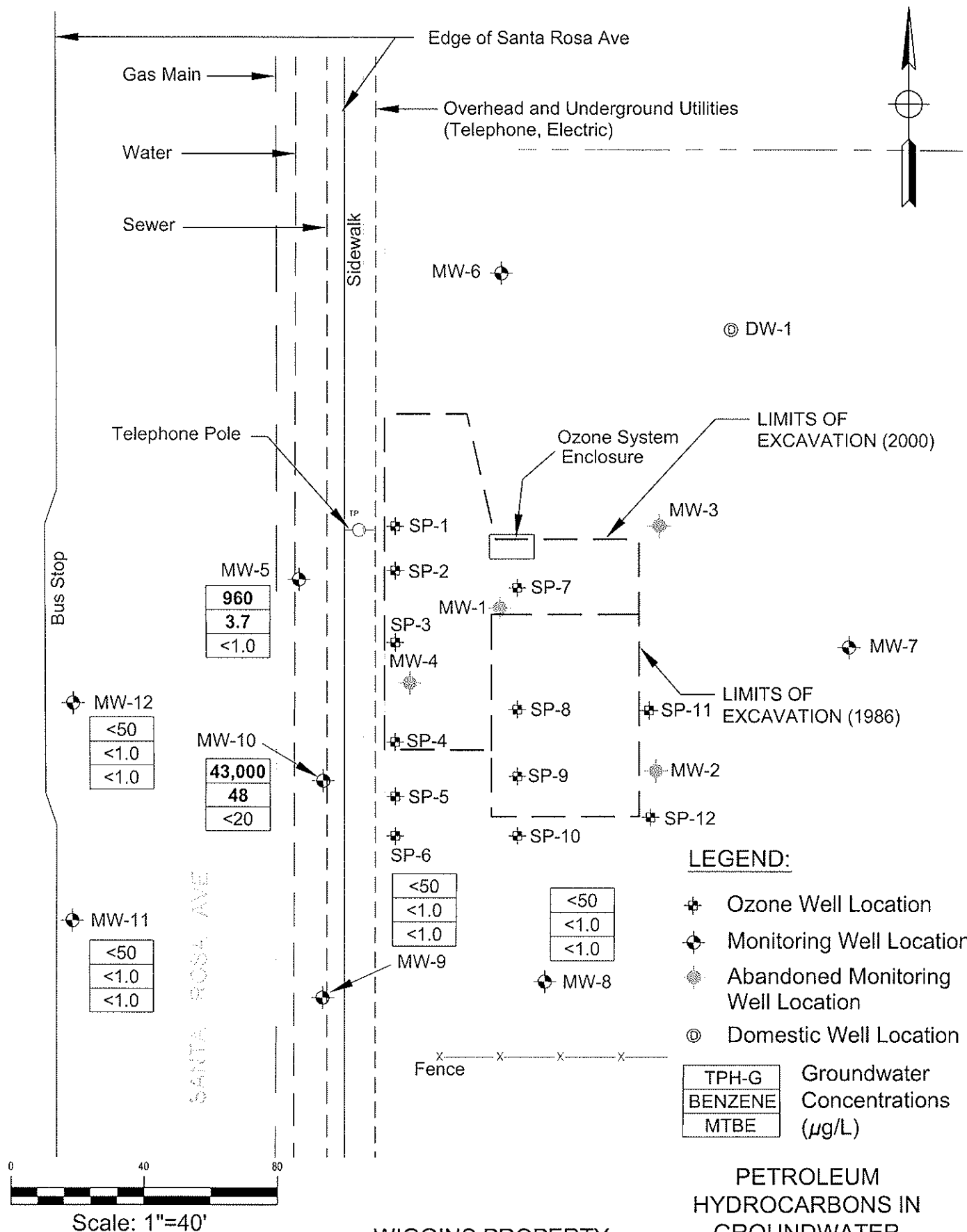
WIGGINS PROPERTY  
3454 Santa Rosa Ave  
Santa Rosa, California

SITE MAP  
FIGURE 2



WIGGINS PROPERTY  
3454 Santa Rosa Ave  
Santa Rosa, California

GROUNDWATER  
CONTOUR MAP  
August 9, 2005  
FIGURE 3



WIGGINS PROPERTY  
3454 Santa Rosa Ave  
Santa Rosa, California

PETROLEUM  
HYDROCARBONS IN  
GROUNDWATER  
August 9, 2005  
FIGURE 4



**Table 1. Water Level Data**  
Wiggins Property  
3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Date	Groundwater Elevation	Depth-to-Water	Top of Casing	Free Product Thickness	Screen Interval	Sand Pack Interval	Bentonite/Grout Interval
		MSL	feet bgs		feet			
MW-1 THROUGH MW-4 HAVE BEEN ABANDONED								
MW-5	04/29/04	99.64	6.25	105.89	--- <sup>a</sup>	5'-20'	4'-21.5'	0'-4'
	07/29/04	96.64	9.25		--- <sup>a</sup>			
	03/02/05	102.34	3.55		--- <sup>a</sup>			
	05/12/05	101.88	4.01		--- <sup>a</sup>			
	8/9/2005†	98.63	7.26		--- <sup>a</sup>			
MW-6	04/29/04	100.72	5.76	106.48	--- <sup>a</sup>	5'-20'	4'-21.5'	0'-4'
	07/29/04	97.57	8.91		--- <sup>a</sup>			
	03/02/05	105.03	1.45		--- <sup>a</sup>			
	05/12/05	103.27	3.21		--- <sup>a</sup>			
	8/9/2005†	99.68	6.80		--- <sup>a</sup>			
MW-7	04/29/04	100.55	5.73	106.28	--- <sup>a</sup>	5'-20'	6'-21.0'	0'-4'
	07/29/04	97.05	9.23		--- <sup>a</sup>			
	03/02/05	104.78	1.50		--- <sup>a</sup>			
	05/12/05	103.61	2.67		--- <sup>a</sup>			
	8/9/2005†	99.09	7.19		--- <sup>a</sup>			
MW-8	04/29/04	99.81	6.53	106.34	--- <sup>a</sup>	5'-20'	4'-21.0'	0'-4'
	07/29/04	96.56	9.78		--- <sup>a</sup>			
	03/02/05	104.10	2.24		--- <sup>a</sup>			
	05/12/05	102.78	3.56		--- <sup>a</sup>			
	8/9/2005†	98.55	7.79		--- <sup>a</sup>			
MW-9	04/29/04	99.67	6.07	105.74	--- <sup>a</sup>	5'-20'	4'-20'	0'-4'
	07/29/04	96.57	9.17		--- <sup>a</sup>			
	03/02/05	102.18	3.56		--- <sup>a</sup>			
	05/12/05	101.69	4.05		--- <sup>a</sup>			
	8/9/2005†	98.57	7.17		--- <sup>a</sup>			
MW-10	8/15/2002*	94.56	11.30	105.86	--- <sup>a</sup>	5'-20'	4'-20'	0'-4'
	11/26/2002*	95.16	10.70		--- <sup>a</sup>			
	2/26/2003*	100.89	4.97		--- <sup>a</sup>			
	5/20/2003*	98.40	7.46		--- <sup>a</sup>			
	9/24/2003*	95.10	10.67		--- <sup>a</sup>			
	04/29/04	---	--- <sup>b</sup>		0.05			
	07/29/04	---	--- <sup>b</sup>		0.15			
	03/02/05	---	--- <sup>b</sup>		0.02			
	5/12/2005 <sup>c</sup>	101.92	3.94		<0.02			
	8/9/2005† <sup>c</sup>	98.55	7.31		--- <sup>a</sup>			
MW-11	04/29/04	99.59	6.11	105.70	--- <sup>a</sup>	5'-20'	4'-20'	0'-4'
	07/29/04	96.60	9.10		--- <sup>a</sup>			
	03/02/05	102.21	3.49		--- <sup>a</sup>			
	05/12/05	101.76	3.94		--- <sup>a</sup>			
	8/9/2005†	98.56	7.14		--- <sup>a</sup>			

**Table 1. Water Level Data**  
Wiggins Property  
3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Date	Groundwater Elevation	Depth-to-Water	Top of Casing	Free Product Thickness	Screen Interval	Sand Pack Interval	Bentonite/Grout Interval
		MSL	feet bgs			feet		
MW-12	04/29/04	99.57	6.26	105.83	--- <sup>a</sup>	5'-20'	4'-20'	0'-4'
	07/29/04	96.59	9.24		--- <sup>a</sup>			
	03/02/05	102.21	3.62		--- <sup>a</sup>			
	05/12/05	101.78	4.05		--- <sup>a</sup>			
	8/9/2005†	98.49	7.34		--- <sup>a</sup>			

**Abbreviations:**

MSL = Mean Sea Level

bgs = Below Ground Surface

--- = Not Measured

\* = Data by others, not verified by Winzler & Kelly

† = The ozone system was installed and started-up on June 2 and 3, 2005

a = Free Product Not Present

b = Free Product Present

c = Depth-to-water measured using free product interface meter

**Table 2. Groundwater Gradient and Flow Direction**

Wiggins Property  
3454 Santa Rosa Ave, Santa Rosa, CA

<b>Date</b>	<b>Groundwater Gradient (ft/ft)</b>	<b>Flow Direction</b>	<b>Wells Used for Calculating Gradient and Flow Direction</b>
04/29/04	0.01	Southwest	MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12
07/29/04	0.01	Southwest	MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12
03/02/05	0.02	Southwest	MW-5, MW-6, MW-7, MW-8, MW-9, MW-11, MW-12
05/12/05	0.01	Southwest	MW-5, MW-6, MW-7, MW-8, MW-9, MW-11, MW-12
08/09/05	0.01	Southwest	MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12



**Table 3. Indicator Parameters**  
Wiggins Property  
3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Sample Date	pH	Temperature (°F)	Conductivity (uS/cm)	ORP (mV)	DO (mg/L)
<b>MW-1 THROUGH MW-4 HAVE BEEN ABANDONED</b>						
<b>MW-5</b>	04/29/04	6.63	67.28	1317	-38	NM
	07/29/04	6.52	68.90	1265	-101	NM
	03/02/05	6.65	67.64	1416	-14	0.66
	05/12/05	6.65	66.20	1060	144	0.25
	8/9/05†	6.65	69.62	1336	-74	0.34
<b>MW-6</b>	04/29/04	6.42	67.82	778	180	NM
	07/29/04	--	--	--	--	NM
	03/02/05	--	--	--	--	0.70
	05/12/05	--	--	--	--	0.69
	8/9/05†	--	--	--	--	0.31
<b>MW-7</b>	04/29/04	6.67	61.70	780	215	NM
	07/29/04	--	--	--	--	3.45
	05/12/05	--	--	--	--	1.37
	8/9/05†	--	--	--	--	0.97
<b>MW-8</b>	04/29/04	6.36	59.72	332	-51	NM
	07/29/04	--	--	--	--	NM
	03/02/05	--	--	--	--	3.05
	05/12/05	6.52	59.36	345	-34	0.22
	8/9/05†	6.59	61.70	387	-76	0.57
<b>MW-9</b>	04/29/04	6.81	66.20	443	186	NM
	07/29/04	6.76	66.70	721	199	NM
	03/02/05	6.76	65.30	939	285	1.69
	05/12/05	6.63	68.00	1466	-53	2.41
	8/9/05†	7.07	68.36	704	82	1.01
<b>MW-10</b>	04/29/04	--	--	--	--	NM
	07/29/04	--	--	--	--	NM
	03/02/05	--	--	--	--	NM
	05/12/05	6.59	67.64	973	-82	NM
	8/9/05†	6.81	70.88	894	-42	17.20
<b>MW-11</b>	04/29/04	6.84	67.46	867	155	NM
	07/29/04	6.74	67.46	759	194	NM
	03/02/05	6.81	67.46	862	233	0.34
	05/12/05	6.83	67.28	804	117	0.43
	8/9/05†	7.03	68.54	790	50	0.52
<b>MW-12</b>	04/29/04	6.98	69.62	849	142	NM
	07/29/04	6.85	68.00	881	188	NM
	03/02/05	6.90	68.00	817	229	0.76
	05/12/05	6.95	67.46	772	106	0.35
	8/9/05†	7.14	68.72	809	37	0.35

**Abbreviations:**

°F = degrees Fahrenheit  
uS/cm = microSiemens per centimeter  
ORP = Oxidation Reduction Potential  
mV = milliVolts  
DO = Dissolved Oxygen  
mg/L = milligrams per liter  
NM = Not Measured  
-- = Not Sampled  
† = The ozone system was installed and started-up on June 2 and 3, 2005

**Table 4. Analytical Results of Groundwater Samples**

Wiggins Property  
3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Date Sampled	TPH-G	TPH-D	TPH-MO	B	T	E	X	EDB	EDC	TBA	MTBE	DIPE	ETBE	TAME	TOG
		ug/L														
MW-1 through MW-4 have been abandoned.																
MW-5	04/29/04	870	57 <sup>a</sup>	<200	<1.0	<1.0	<1.0	<1.0	<1.0	1.7	<25	<1.0	<1.0	<1.0	<1.0	---
	07/29/04	1,100	95 <sup>a</sup>	<200	4.8	<1.0	3.7	1.6	<1.0	1.8	<25	<1.0	<1.0	<1.0	<1.0	---
	03/02/05	750	<50	<200	8.3	1.7	6.6	26	<1.0	1.2	46	<1.0	<1.0	<1.0	<1.0	<1.0 <sup>b</sup>
	05/12/05	320	54	<200	<1.0 <sup>c</sup>	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	---
	8/9/05†	960	86	<200	3.7	<1.0	1.5	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	<1.0
MW-6	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	07/29/04	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03/02/05	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-7	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	07/29/04	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03/02/05	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-8	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	07/29/04	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03/02/05	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05/12/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	---
	8/9/05†	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	<1.0
MW-9	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	07/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	03/02/05	<50	<50	<200	<1.0	5.5	2.0	9.8	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	<1.0
	05/12/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	---
	8/9/05†	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	<1.0
MW-10	04/29/04	Approximately 0.05 feet of free product present.														
	07/29/04	Approximately 0.15 feet of free product present.														
	03/02/05	Approximately 0.02 feet of free product present.														
	05/12/05	8,800	8,000 <sup>d</sup>	<200	55	17	310	426	---	---	<250	<10	<10	<10	<10	---
	8/9/05†	43,000	10,000	<1,000	48	37	260	573	---	---	<500	<20	<20	<20	<20	150
MW-11	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	07/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	03/02/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	<1.0
	05/12/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	---
	8/9/05†	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	<1.0
MW-12	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	07/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	03/02/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	<1.0
	05/12/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	---
	8/9/05†	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	<1.0
DW-3415	04/29/04	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	07/29/04	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	03/02/05	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	05/12/05	<50	---	---	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	---
	8/9/05†	<50	---	---	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	---
DW-3455	04/29/04	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	07/29/04	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	03/02/05	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	8/9/05†	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---

**Table 4. Analytical Results of Groundwater Samples**

Wiggins Property  
3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Date Sampled	TPH-G	TPH-D	TPH-MO	B	T	E	X	EDB	EDC	TBA	MTBE	DIPE	ETBE	TAME	TOG
ug/L																mg/L
DW-3450	05/06/04	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	07/29/04	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	03/02/05	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	05/12/05	<50	---	---	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	---
	8/9/05†	<50	---	---	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	---
DW-3521	05/06/04	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	07/29/04	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	03/02/05	<50	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	---
	05/12/05	<50	---	---	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	---
	8/9/05†	<50	---	---	<1.0	<1.0	<1.0	<1.0	---	---	<25	<1.0	<1.0	<1.0	<1.0	---

**Notes:**

- a = The chromatogram does not exhibit a chromatographic pattern characteristic of diesel. Higher boiling point constituents of weathered gasoline are present.  
b = The laboratory's reportable detection limit was increased slightly due to limited sample volume.  
c = The following additional compound was detected: 1,2-dichloroethane (1.0 ug/L)  
d = The sample chromatogram exhibits a pattern that suggests both weathered gasoline and diesel are simultaneously present.  
--- = Not analyzed  
† = The ozone system was installed and started-up on June 2 and 3, 2005.  
<50 = Analyte not detected at indicated detection limit

**Abbreviations:**

TPH-G = Total petroleum hydrocarbons as gasoline  
TPH-D = Total petroleum hydrocarbons as diesel  
TPH-MO = Total petroleum hydrocarbons as motor oil  
B = Benzene  
T = Toluene  
E = Ethyl benzene  
X = Total xylenes  
EDB = 1,2-dibromoethane  
EDC = 1,2-dichloroethane

MTBE = Methyl tert-butyl ether  
TBA = Tert-butyl alcohol  
DIPE = Di-isopropyl ether  
ETBE = Ethyl tert-butyl ether  
TAME = Tert-amyl methyl ether  
TOG = Total Oil & Grease  
mg/L = milligrams per liter  
ug/L = micrograms per liter

**Analytical Methods:**

418.1M = EPA Method for TOG  
5030/8015M = EPA Method for TPH-G  
3510/8015M = EPA Method for TPH-D & TPH-MO  
8260B = EPA Method for BTEX, oxygenates and lead scavengers

**Table 5. Additional Groundwater Analytical Results**

Wiggins Property  
3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Sample Date	Acetone	Hexavalent Chromium (CR <sup>+6</sup> )	Bromate (BrO <sub>3</sub> <sup>-1</sup> )	Bromide (Br <sup>-1</sup> )	Molybdenum (Mo)	Selenium (Se)	Vanadium (V)
		ug/L	mg/L					
MW-5	05/12/05	<1.0	<0.005 <sup>a</sup>	<0.015 <sup>b</sup>	<b>0.32</b>	<0.05	<0.005	<0.05
	8/9/05†	<1.0	<0.005 <sup>a</sup>	<0.015 <sup>b</sup>	<b>0.36</b>	<0.05	<0.005	<0.05
MW-8	05/12/05	<1.0	<0.005 <sup>a</sup>	<0.015 <sup>b</sup>	<b>0.14</b>	<0.05	<0.005	<0.05
	8/9/05†	<1.0	<0.005 <sup>a</sup>	<0.015 <sup>b</sup>	<b>0.086</b>	<0.05	<0.005	<0.05
MW-9	05/12/05	<1.0	<0.005 <sup>a</sup>	<0.015 <sup>b</sup>	<b>0.30</b>	<0.05	<0.005	<0.05
	8/9/05†	<1.0	<0.005 <sup>a</sup>	<0.015 <sup>b</sup>	<b>0.14</b>	<0.05	<0.005	<0.05
MW-10	05/12/05	<10	<0.005 <sup>a</sup>	<0.015 <sup>b</sup>	<b>0.41</b>	<0.05	<0.005	<0.05
	8/9/05†	<20	<0.005 <sup>a</sup>	<0.015 <sup>b</sup>	<b>0.56</b>	<0.05	<0.005	<0.05
MW-11	05/12/05	<1.0	<0.005 <sup>a</sup>	<0.015 <sup>b</sup>	<b>0.25</b>	<0.05	<0.005	<0.05
	8/9/05†	<1.0	<0.005 <sup>a</sup>	<0.015 <sup>b</sup>	<b>0.19</b>	<0.05	<0.005	<0.05
MW-12	05/12/05	<1.0	<0.005 <sup>a</sup>	<0.015 <sup>b</sup>	<b>0.24</b>	<0.05	<0.005	<0.05
	8/9/05†	<1.0	<0.005 <sup>a</sup>	<0.015 <sup>b</sup>	<b>0.33</b>	<0.05	<0.005	<0.05

**Notes:**

--- = Not analyzed

a = The specific analysis for hexavalent chromium performed within 24 hours yielded a detection limit of 0.010 mg/L. Subsequent and separate analysis for total chromium using Zeeman graphite furnace (EPA 200.9) resulted in no detection of chromium at a detection limit well below 0.005 mg/L. Hexavalent chromium is not present at the level of 0.005 mg/L.

b = The sample required a dilution due to a sample matrix interference. The dilution resulted in a slight increase in the reported detection limit.

† = The ozone system was installed and started-up on June 2 and 3, 2005.

---

## **Appendix A**

# **Site-Specific Sampling Procedures**

# WINZLER & KELLY CONSULTING ENGINEERS

---

## Site-Specific Groundwater Sampling Procedures Wiggins Property 3454 Santa Rosa Avenue Santa Rosa, California August 9, 2005

---

### 1. Objective

Collect representative water level data and groundwater samples.

### 2. Background

Based on the analytical results of the previous sampling, field work proceeded from the monitoring wells in which the samples collected had the lowest concentrations of constituents to the wells that had the highest concentrations of constituents.

Water levels were measured to determine the direction and gradient of groundwater flow. Representative groundwater samples from the water-bearing zone were obtained using disposable polyethylene bailers following purging.

### 3. Personnel Required and Responsibilities

Winzler & Kelly Technicians: Pon Xayasaeng and Brian Bacciarini performed groundwater monitoring and sampling activities in accordance with the procedures outlined below.

### 4. Procedures

#### 4a. Decontamination Procedures

- The wash and rinse buckets, the ES-60 purger pump, and the water level meter were decontaminated using alconox soap and potable water.
- The pump and water level meter were decontaminated following use in each well.
- Nitrile gloves were worn by the sampler at all times and changed after handling equipment and instruments.

#### 4b. Calibration Procedures

- The Ultrameter was calibrated for conductivity and pH. Temperature calibration is not necessary in the Ultrameter.
- Conductivity was calibrated using KCl-7000 standard solution within its expiration date.
- The calibration for pH included “zeroing” the Ultrameter with a pH 7 buffer solution followed by adjusting the gain with acid and base buffers (4.01 and 10.00).

#### **4c. Groundwater Elevations**

- All monitoring wells were opened and expandable caps removed.
- Each well was allowed to equilibrate to atmospheric pressure.
- An electronic water level meter was used to measure the depth-to-groundwater in each monitoring well.
- An oil/water interface meter and a flapper valve were used to measure the amount of free product present in monitoring well MW-10.
- The depth, time, and visual observations regarding well access, condition, security, etc., were recorded on a Water Level Data Sheet.

#### **4d. DO Concentrations**

- The membrane on the YSI Model 55 DO meter was checked for the presence of bubbles and wrinkles, neither of which was observed.
- The meter was calibrated in the field prior to collecting measurements.
- Using the calibrated YSI Model 55 DO Meter, DO concentrations were measured in each monitoring well.

#### **4e. Purging**

- The volume of standing water in each monitoring well was calculated using the diameter of the well, the measured depth-to-water and the depth-to-bottom. The volume was recorded on the Well Sampling Data Sheet for each well.
- All wells were purged using an ES-60 purger pump attached to 40-feet of plastic tubing.
- Domestic wells were purged by running the tap closest to the well and until the well pump switched on.
- During purging of monitoring wells, the parameters of conductivity, pH, temperature, and oxidation-reduction potential were monitored using the Ultrameter at each well casing interval. Visual observations of color/odor/turbidity were also monitored.
- The time, readings, and visual comments were recorded on the Well Sampling Data Sheet.
- Each monitoring well was purged a minimum of three casing volumes, or until the indicator parameters stabilized.
- Purge and decontamination water was transferred to 55-gallon drums labeled and stored on site.

#### **4f. Groundwater Sample Collection**

- Groundwater samples were collected by lowering previously unused, disposable, polyethylene, bottom-filling bailers into the well.
- When completely full, the bailer was carefully retracted from the well casing.
- The water was transferred from the bailer to the appropriate certified clean sampling containers.
- Each VOA was immediately capped. The vial was checked for air bubbles by inverting and gently tapping. If any bubbles were visible, a new vial was filled and confirmed to be free of any air bubbles.



- All samples were labeled with the following information:  

Sample ID	Date and Time Sample Collected
Location	Sampler's Initials
Project Number	
- Sample information was documented on a Chain-of-Custody form.
- All samples were placed in an ice chest chilled with ice.
- Upon completion of the sampling activities, each well was closed and secured by replacing the well cap and lock.

## 5. **Equipment Used:**

- Disposable gloves
- Potable water
- Alconox soap
- Containers to hold rinsate water
- Scrub Brushes
- Tools to open wells
- Keys to wells
- Water Level Data Form/pencil
- Well Sampling Data Sheet
- Groundwater Sampling Log form
- Water level meter
- 12-volt DC 1.5-inch electric submersible pump
- UltraMeter
- Containers to hold extracted water (as required)
- Disposable bailers (previously unused)
- Monofilament nylon line (50-lb test)
- Scissors
- Laboratory supplied sample containers (preserved, as required)
- Sample labels
- Ice chest
- Ice
- Labels/indelible marker
- Trash bags
- 55-gallon drums
- Ziploc bags
- Portable 12-V battery

---

## **Appendix B**

# **Analytical Laboratory Report**



Report Date: August 29, 2005

Pon Xayasaeng  
Winzler & Kelly Consulting Engineers  
495 Tesconi Circle, Suite 9  
Santa Rosa, CA 95401-4696

## LABORATORY REPORT

Project Name: **Wiggins Property** **0259805001.32003**

Lab Project Number: **5080906**

This 28 page report of analytical data has been reviewed and approved for release.

---

Mark A. Valentini, Ph.D.  
Laboratory Director



### TPH Gasoline in Water

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
31479	MW-8	TPH/Gasoline	ND	50

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5745
Date Received: 08/09/05	Method: EPA 5030/8015M	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
31480	MW-12	TPH/Gasoline	ND	50

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5745
Date Received: 08/09/05	Method: EPA 5030/8015M	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
31481	MW-11	TPH/Gasoline	ND	50

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5745
Date Received: 08/09/05	Method: EPA 5030/8015M	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
31482	MW-9	TPH/Gasoline	ND	50

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5745
Date Received: 08/09/05	Method: EPA 5030/8015M	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
31483	MW-5	TPH/Gasoline	960	50

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5745
Date Received: 08/09/05	Method: EPA 5030/8015M	



<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (ug/L)</u>	<u>RDL (ug/L)</u>
31484	MW-10	TPH/Gasoline	43,000	2,500

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5745
Date Received: 08/09/05	Method: EPA 5030/8015M	

<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (ug/L)</u>	<u>RDL (ug/L)</u>
31485	DW-3415	TPH/Gasoline	ND	50

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5745
Date Received: 08/09/05	Method: EPA 5030/8015M	

<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (ug/L)</u>	<u>RDL (ug/L)</u>
31486	DW-3521	TPH/Gasoline	ND	50

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5745
Date Received: 08/09/05	Method: EPA 5030/8015M	

<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (ug/L)</u>	<u>RDL (ug/L)</u>
31487	DW-3450	TPH/Gasoline	ND	50

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5745
Date Received: 08/09/05	Method: EPA 5030/8015M	

<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (ug/L)</u>	<u>RDL (ug/L)</u>
31497	DW-3455	TPH/Gasoline	ND	50

Date Sampled: 08/09/05	Date Analyzed: 08/18/05	QC Batch #: 5745
Date Received: 08/10/05	Method: EPA 5030/8015M	



---

**TPH Diesel & Motor Oil in Water**

---

<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (ug/L)</u>	<u>RDL (ug/L)</u>
31479	MW-8	TPH/Diesel Motor Oil	ND ND	50 200

Date Sampled: 08/09/05	Date Extracted: 08/16/05	QC Batch #: 5751
Date Received: 08/09/05	Date Analyzed: 08/16/05	Method: EPA 3510/8015M

---

<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (ug/L)</u>	<u>RDL (ug/L)</u>
31480	MW-12	TPH/Diesel Motor Oil	ND ND	50 200

Date Sampled: 08/09/05	Date Extracted: 08/16/05	QC Batch #: 5751
Date Received: 08/09/05	Date Analyzed: 08/16/05	Method: EPA 3510/8015M

---

<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (ug/L)</u>	<u>RDL (ug/L)</u>
31481	MW-11	TPH/Diesel Motor Oil	ND ND	50 200

Date Sampled: 08/09/05	Date Extracted: 08/16/05	QC Batch #: 5751
Date Received: 08/09/05	Date Analyzed: 08/16/05	Method: EPA 3510/8015M

---



Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
31482	MW-9	TPH/Diesel Motor Oil	ND ND	50 200

Date Sampled: 08/09/05	Date Extracted: 08/16/05	QC Batch #: 5751
Date Received: 08/09/05	Date Analyzed: 08/16/05	Method: EPA 3510/8015M

---

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
31483	MW-5	TPH/Diesel Motor Oil	86 ND	50 200

Date Sampled: 08/09/05	Date Extracted: 08/16/05	QC Batch #: 5751
Date Received: 08/09/05	Date Analyzed: 08/16/05	Method: EPA 3510/8015M

---

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
31484	MW-10	TPH/Diesel Motor Oil	10,000 ND	250 1,000

Date Sampled: 08/09/05	Date Extracted: 08/16/05	QC Batch #: 5751
Date Received: 08/09/05	Date Analyzed: 08/16/05, 08/18/05	Method: EPA 3510/8015M

---





### Volatile Hydrocarbons by GC/MS in Water

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
31479	MW-8	benzene	ND	1.0
		toluene	ND	1.0
		ethyl benzene	ND	1.0
		m,p-xylene	ND	1.0
		o-xylene	ND	1.0
		acetone	ND	1.0

#### Oxygenated Gasoline Additives

tert-butyl alcohol (TBA)	ND	25
methyl tert-butyl ether (MTBE)	ND	1.0
di-isopropyl ether (DIPE)	ND	1.0
ethyl tert-butyl ether (ETBE)	ND	1.0
tert-amyl methyl ether (TAME)	ND	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.3	102	70 – 130
toluene-d <sub>8</sub> (20)	20.3	102	70 – 130
4-bromofluorobenzene (20)	18.3	91.5	70 – 130

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5741
Date Received: 08/09/05	Method: EPA 8260B	



Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
31480	MW-12	benzene	ND	1.0
		toluene	ND	1.0
		ethyl benzene	ND	1.0
		m,p-xylene	ND	1.0
		o-xylene	ND	1.0
		acetone	ND	1.0

**Oxygenated Gasoline Additives**

tert-butyl alcohol (TBA)	ND	25
methyl tert-butyl ether (MTBE)	ND	1.0
di-isopropyl ether (DIPE)	ND	1.0
ethyl tert-butyl ether (ETBE)	ND	1.0
tert-amyl methyl ether (TAME)	ND	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.1	101	70 – 130
toluene-d <sub>8</sub> (20)	20.3	102	70 – 130
4-bromofluorobenzene (20)	18.3	91.5	70 – 130

Date Sampled: 08/09/05  
Date Received: 08/09/05

Date Analyzed: 08/11/05  
Method: EPA 8260B

QC Batch #: 5741



Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
31481	MW-11	benzene	ND	1.0
		toluene	ND	1.0
		ethyl benzene	ND	1.0
		m,p-xylene	ND	1.0
		o-xylene	ND	1.0
		acetone	ND	1.0

**Oxygenated Gasoline Additives**

tert-butyl alcohol (TBA)	ND	25
methyl tert-butyl ether (MTBE)	ND	1.0
di-isopropyl ether (DIPE)	ND	1.0
ethyl tert-butyl ether (ETBE)	ND	1.0
tert-amyl methyl ether (TAME)	ND	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.2	101	70 – 130
toluene-d <sub>8</sub> (20)	20.2	101	70 – 130
4-bromofluorobenzene (20)	18.2	91.0	70 – 130

Date Sampled: 08/09/05  
Date Received: 08/09/05

Date Analyzed: 08/11/05  
Method: EPA 8260B

QC Batch #: 5741



Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
31482	MW-9	benzene	ND	1.0
		toluene	ND	1.0
		ethyl benzene	ND	1.0
		m,p-xylene	ND	1.0
		o-xylene	ND	1.0
		acetone	ND	1.0
		<b>Oxygenated Gasoline Additives</b>		
		tert-butyl alcohol (TBA)	ND	25
		methyl tert-butyl ether (MTBE)	ND	1.0
		di-isopropyl ether (DIPE)	ND	1.0
		ethyl tert-butyl ether (ETBE)	ND	1.0
		tert-amyl methyl ether (TAME)	ND	1.0
Surrogates		Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)		20.3	102	70 – 130
toluene-d <sub>8</sub> (20)		20.3	102	70 – 130
4-bromofluorobenzene (20)		18.2	91.0	70 – 130

Date Sampled: 08/09/05  
Date Received: 08/09/05

Date Analyzed: 08/11/05  
Method: EPA 8260B

QC Batch #: 5741



Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
31483	MW-5	benzene	3.7	1.0
		toluene	ND	1.0
		ethyl benzene	1.5	1.0
		m,p-xylene	ND	1.0
		o-xylene	ND	1.0
		acetone	ND	1.0

**Oxygenated Gasoline Additives**

tert-butyl alcohol (TBA)	ND	25
methyl tert-butyl ether (MTBE)	ND	1.0
di-isopropyl ether (DIPE)	ND	1.0
ethyl tert-butyl ether (ETBE)	ND	1.0
tert-amyl methyl ether (TAME)	ND	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.0	100	70 – 130
toluene-d <sub>8</sub> (20)	20.3	102	70 – 130
4-bromofluorobenzene (20)	18.1	90.5	70 – 130

Date Sampled: 08/09/05  
Date Received: 08/09/05

Date Analyzed: 08/11/05  
Method: EPA 8260B

QC Batch #: 5741



Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
31484	MW-10	benzene	48	20
		toluene	37	20
		ethyl benzene	260	20
		m,p-xylene	540	20
		o-xylene	33	20
		acetone	ND	20

#### Oxygenated Gasoline Additives

tert-butyl alcohol (TBA)	ND	500
methyl tert-butyl ether (MTBE)	ND	20
di-isopropyl ether (DIPE)	ND	20
ethyl tert-butyl ether (ETBE)	ND	20
tert-amyl methyl ether (TAME)	ND	20

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.1	101	70 – 130
toluene-d <sub>8</sub> (20)	20.1	101	70 – 130
4-bromofluorobenzene (20)	18.4	92.0	70 – 130

Date Sampled: 08/09/05  
Date Received: 08/09/05

Date Analyzed: 08/12/05  
Method: EPA 8260B

QC Batch #: 5741



Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
31485	DW-3415	benzene	ND	1.0
		toluene	ND	1.0
		ethyl benzene	ND	1.0
		m,p-xylene	ND	1.0
		o-xylene	ND	1.0
		acetone	ND	1.0

**Oxygenated Gasoline Additives**

tert-butyl alcohol (TBA)	ND	25
methyl tert-butyl ether (MTBE)	ND	1.0
di-isopropyl ether (DIPE)	ND	1.0
ethyl tert-butyl ether (ETBE)	ND	1.0
tert-amyl methyl ether (TAME)	ND	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.2	101	70 – 130
toluene-d <sub>8</sub> (20)	20.4	102	70 – 130
4-bromofluorobenzene (20)	18.2	91.0	70 – 130

Date Sampled: 08/09/05  
Date Received: 08/09/05

Date Analyzed: 08/11/05  
Method: EPA 8260B

QC Batch #: 5741



Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
31486	DW-3521	benzene	ND	1.0
		toluene	ND	1.0
		ethyl benzene	ND	1.0
		m,p-xylene	ND	1.0
		o-xylene	ND	1.0
		acetone	ND	1.0

**Oxygenated Gasoline Additives**

tert-butyl alcohol (TBA)	ND	25
methyl tert-butyl ether (MTBE)	ND	1.0
di-isopropyl ether (DIPE)	ND	1.0
ethyl tert-butyl ether (ETBE)	ND	1.0
tert-amyl methyl ether (TAME)	ND	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.0	100	70 – 130
toluene-d <sub>8</sub> (20)	20.3	102	70 – 130
4-bromofluorobenzene (20)	18.2	91.0	70 – 130

Date Sampled: 08/09/05  
Date Received: 08/09/05

Date Analyzed: 08/11/05  
Method: EPA 8260B

QC Batch #: 5741





Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
31487	DW-3450	benzene	ND	1.0
		toluene	ND	1.0
		ethyl benzene	ND	1.0
		m,p-xylene	ND	1.0
		o-xylene	ND	1.0
		acetone	ND	1.0

**Oxygenated Gasoline Additives**

tert-butyl alcohol (TBA)	ND	25
methyl tert-butyl ether (MTBE)	ND	1.0
di-isopropyl ether (DIPE)	ND	1.0
ethyl tert-butyl ether (ETBE)	ND	1.0
tert-amyl methyl ether (TAME)	ND	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	19.9	99.5	70 – 130
toluene-d <sub>8</sub> (20)	20.2	101	70 – 130
4-bromofluorobenzene (20)	18.3	91.5	70 – 130

Date Sampled: 08/09/05  
Date Received: 08/09/05

Date Analyzed: 08/11/05  
Method: EPA 8260B

QC Batch #: 5741



Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
31497	DW-3455	benzene	ND	1.0
		toluene	ND	1.0
		ethyl benzene	ND	1.0
		m,p-xylene	ND	1.0
		o-xylene	ND	1.0
		acetone	ND	1.0
Oxygenated Gasoline Additives				
		tert-butyl alcohol (TBA)	ND	25
		methyl tert-butyl ether (MTBE)	ND	1.0
		di-isopropyl ether (DIPE)	ND	1.0
		ethyl tert-butyl ether (ETBE)	ND	1.0
		tert-amyl methyl ether (TAME)	ND	1.0
Surrogates		Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)		19.9	99.5	70 – 130
toluene-d <sub>8</sub> (20)		20.5	103	70 – 130
4-bromofluorobenzene (20)		18.3	91.5	70 – 130

Date Sampled: 08/09/05  
Date Received: 08/10/05

Date Analyzed: 08/11/05  
Method: EPA 8260B

QC Batch #: 5741



### Total Oil & Grease in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31479	MW-8	Total Oil & Grease	ND	1.0

Date Sampled: 08/09/05	Date Extracted: 08/12/05	QC Batch #: S0455
Date Received: 08/09/05	Date Analyzed: 08/12/05	Method: EPA 418.1M

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31480	MW-12	Total Oil & Grease	ND	1.0

Date Sampled: 08/09/05	Date Extracted: 08/12/05	QC Batch #: S0455
Date Received: 08/09/05	Date Analyzed: 08/12/05	Method: EPA 418.1M

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31481	MW-11	Total Oil & Grease	ND	1.0

Date Sampled: 08/09/05	Date Extracted: 08/12/05	QC Batch #: S0455
Date Received: 08/09/05	Date Analyzed: 08/12/05	Method: EPA 418.1M



<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (mg/L)</u>	<u>RDL (mg/L)</u>
31482	MW-9	Total Oil & Grease	ND	1.0

Date Sampled: 08/09/05	Date Extracted: 08/12/05	QC Batch #: S0455
Date Received: 08/09/05	Date Analyzed: 08/12/05	Method: EPA 418.1M

---

<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (mg/L)</u>	<u>RDL (mg/L)</u>
31483	MW-5	Total Oil & Grease	ND	1.0

Date Sampled: 08/09/05	Date Extracted: 08/12/05	QC Batch #: S0455
Date Received: 08/09/05	Date Analyzed: 08/12/05	Method: EPA 418.1M

---

<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (mg/L)</u>	<u>RDL (mg/L)</u>
31484	MW-10	Total Oil & Grease	150	1.0

Date Sampled: 08/09/05	Date Extracted: 08/12/05	QC Batch #: S0455
Date Received: 08/09/05	Date Analyzed: 08/12/05	Method: EPA 418.1M

---



### Hexavalent Chromium in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31479	MW-8	Hexavalent Chromium (Cr+6)	ND (1)	0.005

Date Sampled: 08/09/05	Date Analyzed: 08/10/05	QC Batch #: 5735
Date Received: 08/09/05	Method: EPA 7196A	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31480	MW-12	Hexavalent Chromium (Cr+6)	ND (1)	0.005

Date Sampled: 08/09/05	Date Analyzed: 08/10/05	QC Batch #: 5735
Date Received: 08/09/05	Method: EPA 7196A	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31481	MW-11	Hexavalent Chromium (Cr+6)	ND (1)	0.005

Date Sampled: 08/09/05	Date Analyzed: 08/10/05	QC Batch #: 5735
Date Received: 08/09/05	Method: EPA 7196A	

(1) The specific analysis for hexavalent chromium performed within 24 hours yielded a detection limit of 0.010 mg/L. Subsequent and separate analysis for total chromium using Zeeman Graphite Furnace (EPA 200.9) resulted in no detection of chromium at a detection limit well below 0.005 mg/L. Hexavalent Chromium is not present at the level of 0.005 mg/L.



Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31482	MW-9	Hexavalent Chromium (Cr+6)	ND (1)	0.005

Date Sampled: 08/09/05	Date Analyzed: 08/10/05	QC Batch #: 5735
Date Received: 08/09/05	Method: EPA 7196A	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31483	MW-5	Hexavalent Chromium (Cr+6)	ND (1)	0.005

Date Sampled: 08/09/05	Date Analyzed: 08/10/05	QC Batch #: 5735
Date Received: 08/09/05	Method: EPA 7196A	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31484	MW-10	Hexavalent Chromium (Cr+6)	ND (1)	0.005

Date Sampled: 08/09/05	Date Analyzed: 08/10/05	QC Batch #: 5735
Date Received: 08/09/05	Method: EPA 7196A	

(1) The specific analysis for hexavalent chromium performed within 24 hours yielded a detection limit of 0.010 mg/L. Subsequent and separate analysis for total chromium using Zeeman Graphite Furnace (EPA 200.9) resulted in no detection of chromium at a detection limit well below 0.005 mg/L. Hexavalent Chromium is not present at the level of 0.005 mg/L.



### Bromate and Bromide in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31479	MW-8	Bromate ( $\text{BrO}_3^{-1}$ )	ND (2)	0.015
		Bromide ( $\text{Br}^{-1}$ )	0.086	0.020

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5749
Date Received: 08/09/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31480	MW-12	Bromate ( $\text{BrO}_3^{-1}$ )	ND (2)	0.015
		Bromide ( $\text{Br}^{-1}$ )	0.33	0.020

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5749
Date Received: 08/09/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31481	MW-11	Bromate ( $\text{BrO}_3^{-1}$ )	ND (2)	0.015
		Bromide ( $\text{Br}^{-1}$ )	0.19	0.020

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5749
Date Received: 08/09/05	Methods: EPA 300 (IC)	

(2) The sample required a dilution due to a sample matrix interference. The dilution resulted in a slight increase in the reported detection limit.



Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31482	MW-9	Bromate ( $\text{BrO}_3^{-1}$ )	ND (2)	0.015
		Bromide ( $\text{Br}^{-1}$ )	0.14	0.020

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5749
Date Received: 08/09/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31483	MW-5	Bromate ( $\text{BrO}_3^{-1}$ )	ND (2)	0.015
		Bromide ( $\text{Br}^{-1}$ )	0.36	0.020

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5749
Date Received: 08/09/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31484	MW-10	Bromate ( $\text{BrO}_3^{-1}$ )	ND (2)	0.015
		Bromide ( $\text{Br}^{-1}$ )	0.56	0.020

Date Sampled: 08/09/05	Date Analyzed: 08/11/05	QC Batch #: 5749
Date Received: 08/09/05	Methods: EPA 300 (IC)	

(2) The sample required a dilution due to a sample matrix interference. The dilution resulted in a slight increase in the reported detection limit.





### Dissolved Metals in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31479	MW-8	Vanadium (V)	ND	0.050
		Selenium (Se)	ND	0.005
		Molybdenum (Mo)	ND	0.050

Date Sampled:	08/09/05	Date Digested:	08/11/05	QC Batch #:	5734, 5740
Date Received:	08/09/05	Date Analyzed:	08/11/05, 08/12/05		
Method:	EPA 200.9 Zeeman GFF/EPA 3010/6010				

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31480	MW-12	Vanadium (V)	ND	0.050
		Selenium (Se)	ND	0.005
		Molybdenum (Mo)	ND	0.050

Date Sampled:	08/09/05	Date Digested:	08/11/05	QC Batch #:	5734, 5740
Date Received:	08/09/05	Date Analyzed:	08/11/05, 08/12/05		
Method:	EPA 200.9 Zeeman GFF/EPA 3010/6010				

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31481	MW-11	Vanadium (V)	ND	0.050
		Selenium (Se)	ND	0.005
		Molybdenum (Mo)	ND	0.050

Date Sampled:	08/09/05	Date Digested:	08/11/05	QC Batch #:	5734, 5740
Date Received:	08/09/05	Date Analyzed:	08/11/05, 08/12/05		
Method:	EPA 200.9 Zeeman GFF/EPA 3010/6010				



Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31482	MW-9	Vanadium (V)	ND	0.050
		Selenium (Se)	ND	0.005
		Molybdenum (Mo)	ND	0.050

Date Sampled: 08/09/05	Date Digested: 08/11/05	QC Batch #: 5734, 5740
Date Received: 08/09/05	Date Analyzed: 08/11/05, 08/12/05	
Method: EPA 200.9 Zeeman GFF/EPA 3010/6010		

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31483	MW-5	Vanadium (V)	ND	0.050
		Selenium (Se)	ND	0.005
		Molybdenum (Mo)	ND	0.050

Date Sampled: 08/09/05	Date Digested: 08/11/05	QC Batch #: 5734, 5740
Date Received: 08/09/05	Date Analyzed: 08/11/05, 08/12/05	
Method: EPA 200.9 Zeeman GFF/EPA 3010/6010		

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
31484	MW-10	Vanadium (V)	ND	0.050
		Selenium (Se)	ND	0.005
		Molybdenum (Mo)	ND	0.050

Date Sampled: 08/09/05	Date Digested: 08/11/05	QC Batch #: 5734, 5740
Date Received: 08/09/05	Date Analyzed: 08/11/05, 08/12/05	
Method: EPA 200.9 Zeeman GFF/EPA 3010/6010		



## LABORATORY QUALITY ASSURANCE REPORT

QC Batch #: 5745

Lab Project #: 5080906

Sample ID	Compound	Result (ug/L)
MB	TPH/Gas	ND
MB	MTBE	ND
MB	Benzene	ND
MB	Toluene	ND
MB	Ethyl Benzene	ND
MB	Xylenes	ND

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.
31442	CMS	TPH/Gas		NS	
	CMS	Benzene	9.60	10.0	96.0
	CMS	Toluene	9.65	10.0	96.5
	CMS	Ethyl Benzene	10.2	10.0	102
	CMS	Xylenes	30.5	30.0	102

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.	RPD
31442	CMSD	TPH/Gas		NS		
	CMSD	Benzene	9.51	10.0	95.1	0.94
	CMSD	Toluene	9.83	10.0	98.3	1.8
	CMSD	Ethyl Benzene	10.2	10.0	102	0.20
	CMSD	Xylenes	30.2	30.0	101	0.99

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate  
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery



QC Batch #: 5751

Lab Project #: 5080906

Sample ID	Compound	Result (ug/L)
MB	TPH/Diesel	ND

Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.
LCS	TPH/Diesel	2,000	2,730	73.3

Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.	RPD
LCSD	TPH/Diesel	1,990	2,730	72.9	0.50

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate  
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

QC Batch #: 5741

Lab Project #: 5080906

Sample ID	Compound Name	Result (ug/L)
MB	1,1-dichloroethene	ND
MB	benzene	ND
MB	trichloroethene	ND
MB	toluene	ND
MB	chlorobenzene	ND

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.2	101	70 – 130
toluene-d <sub>8</sub> (20)	20.2	101	70 – 130
4-bromofluorobenzene (20)	18.4	92.0	70 – 130



Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.
31518	CMS	1,1-dichloroethene	18.6	25.0	74.4
	CMS	benzene	23.3	25.0	93.2
	CMS	trichloroethene	23.9	25.0	95.6
	CMS	toluene	24.6	25.0	98.4
	CMS	chlorobenzene	23.9	25.0	95.6

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.8	104	70 – 130
toluene-d <sub>8</sub> (20)	21.7	109	70 – 130
4-bromofluorobenzene (20)	18.2	91.0	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.	RPD
31518	CMSD	1,1-dichloroethene	17.9	25.0	71.6	3.8
	CMSD	benzene	22.8	25.0	91.2	2.2
	CMSD	trichloroethene	23.0	25.0	92.0	3.8
	CMSD	toluene	24.1	25.0	96.4	2.1
	CMSD	chlorobenzene	23.8	25.0	95.2	0.42

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.5	103	70 – 130
toluene-d <sub>8</sub> (20)	21.2	106	70 – 130
4-bromofluorobenzene (20)	18.4	92.0	70 – 130

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate  
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

QC Batch #: S0455Lab Project #: 5080906

Sample ID	Compound	Result (mg/L)
MB	10/30W Motor Oil	ND

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.
CMS	10/30W Motor Oil	12.8	16.0	80.0

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.	RPD
CMSD	10/30W Motor Oil	16.7	17.0	98.2	20

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate  
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

QC Batch #: 5735Lab Project #: 5080906

Sample ID	Compound	Result (mg/L)
MB	Hexavalent Chromium (Cr+6)	ND

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.
LCS	Hexavalent Chromium (Cr+6)	0.981	1.00	98.1

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.	RPD
LCSD	Hexavalent Chromium (Cr+6)	0.984	1.00	98.4	0.31

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate  
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery



QC Batch #: 5734

Lab Project #: 5080906

Sample ID	Compound	Result (ug/L)
MB	Vanadium (As)	ND
MB	Selenium (Se)	ND
MB	Molybdenum (Mo)	ND

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.
31441	CMS	Vanadium (As)	0.490	0.500	98.0
	CMS	Selenium (Se)	0.459	0.500	91.8
	CMS	Molybdenum (Mo)	0.449	0.500	89.8

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.	RPD
31441	CMSD	Vanadium (As)	0.492	0.500	98.4	0.41
	CMSD	Selenium (Se)	0.458	0.500	91.6	0.22
	CMSD	Molybdenum (Mo)	0.461	0.500	92.2	2.6

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate  
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery



## CHAIN OF CUSTODY

**Analytical Sciences**  
P.O. Box 750336, Petaluma, CA 94975-0336  
110 Liberty Street, Petaluma, CA 94952  
(707) 769-3128  
Fax (707) 769-8093

LAB PROJECT NUMBER: 5080906

WINZLER & KELLY PROJECT NAME: Wiggins Property

WINZLER & KELLY PROJECT NUMBER: 025480500132003

GEOTRACKER EDF: X Y N

GLOBAL ID: 10609700531

COOLER TEMPERATURE: 21.2°C

COC: 3 PAGE 1 OF 3

TURNAROUND TIME (check one)

MOBILE LAB ☐ SAME DAY ☐ 24 HOURS ☐ 48 HOURS ☐ 5 DAYS ☒ NORMAL ☐

### CLIENT INFORMATION

COMPANY NAME: WINZLER & KELLY CONSULTING ENGINEERS

ADDRESS: 495 TESCONI CIRCLE, SUITE 9

SANTA ROSA, CA 95401-4696

CONTACT: Debbie Smith & Quishons: Ron

PHONE#: (707) 523-1010

FAX #: (707) 527-8679

ANALYSIS													LAB SAMPLE #						
ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	TPH/GAS/BTEX EPA 8015M/8040	TPH DIESEL / MOTOR OIL EPA 8015M/8040	VOLATILE HYDROCARBONS EPA 8260B (FULL USE)	BTEX & OXYGENATES + HYDROCARBONS EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8260M	CHLORINATED SOLVENTS EPA 8010 / EPA 8260B	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG SM 8520F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141/ 8082	TOG EPA 418.1M	EPA 391 Hexachloro EPA 300 Bromate EPA 610	COMMENTS	LAB SAMPLE #
1	mw-8	08/09/05	1145	W	3 1 2	✓	✓	✓	✓	✓						✓	✓	Add acetone to 8260B	31479
2	mw-12		1230	W	1	✓	✓	✓	✓	✓						✓	✓		31480
3	mw-11		1245		1	✓	✓	✓	✓	✓						✓	✓		31481
4	mw-9		1355		1	✓	✓	✓	✓	✓						✓	✓	Set Hexachloro	31482
5	mw-5		1415		1	✓	✓	✓	✓	✓						✓	✓	limit c < 5µg/L	31483
6	mw-10		1430		1	✓	✓	✓	✓	✓						✓	✓		31484
7	DW-3415		1500		4005	✓	✓	✓	✓	✓								Asst bromate	31485
8	DW-3521		1520		1	✓	✓	✓	✓	✓								limit c < 10µg/L	31486
9	DW-3450		1530		1	✓	✓	✓	✓	✓									31487
10																		Note: Shown in mw-10	
11																			

**SIGNATURES**

RELINQUISHED BY: [Signature] DATE: 8/9/05 TIME: 15:49

SAMPLED BY: [Signature] DATE: 8/9/05 TIME: 15:49

RECEIVED BY: [Signature] DATE: 8/9/05 TIME: 15:49

LAB PROJECT NUMBER: 5080906

WINZLER & KELLY PROJECT NAME: Wiggins Property

WINZLER & KELLY PROJECT NUMBER: 025480500132003

GEOTRACKER EDF: X Y N

GLOBAL ID: 10609700531

COOLER TEMPERATURE: 21.2°C

COC: 3 PAGE 1 OF 3





# CHAIN OF CUSTODY

Analytical Sciences  
P.O. Box 750336, Petaluma, CA 94975-0336  
110 Liberty Street, Petaluma, CA 94952  
(707) 769-3128  
Fax (707) 769-8093

## CLIENT INFORMATION

COMPANY NAME: WINZLER & KELLY CONSULTING ENGINEERS  
ADDRESS: 495 TESCONI CIRCLE, SUITE 9  
SANTA ROSA, CA 95401-4696  
CONTACT: Results Sample Questions: Ron  
PHONE#: (707) 523-1010  
FAX #: (707) 527-8679

LAB PROJECT NUMBER: 5080906

WINZLER & KELLY PROJECT NAME: Wiggins Property

WINZLER & KELLY PROJECT NUMBER: 0254805001-32008

TURNAROUND TIME (check one)

MOBILE LAB \_\_\_\_\_  
SAME DAY \_\_\_\_\_  
48 HOURS \_\_\_\_\_  
5 DAYS Y

GEOTRACKER EDF: X Y N  
GLOBAL ID: 10609700531

COOLER TEMPERATURE

Blue Ice °C

COC

PAGE 1 OF 2

## ANALYSIS

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	TPH/GAS/BTEX <del>TPH</del> EPA 8015/8010/8013	TPH DIESEL / MOTOR OIL EPA 8015M	VOLATILE HYDROCARBONS EPA 8260B (FULL LIST)	BTEX & OXYGENATES <del>TPH</del> EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8260M	CHLORINATED SOLVENTS EPA 8010 / EPA 8260B	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG SM 8520F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141 / 8082	CAM 17 METALS / 5 LUFT METALS	COMMENTS	LAB SAMPLE #
1	DW-3455	8/9/05	16:07	W	4	yes	X			X							please add 31497 to other samples from Wiggins site. (one report)	31497
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		

## SIGNATURES

SAMPLED BY:

Ron Kayaswamy

RELINQUISHED BY:

Ron Kayaswamy

RECEIVED BY LABORATORY:

[Signature]

8/9/05 16:07  
DATE TIME

8/10/05 1630  
DATE TIME

---

## **Appendix C**

### **Operation and Maintenance Data**

# **Operation and Maintenance Data**

Wiggins Property

3454 Santa Rosa Avenue, Santa Rosa, Ca

Date	System Total Run Time (hours)	Ozone Readings				Air Readings		
		Run Time Per Sparge Point (hours)	Injection Rate <sup>a</sup> (lbs O3/day)	Injection Pressure (psi)	Flow Rate (SCFM)	Run Time Per Sparge Point (psi)	Injection Pressure (psi)	Flow Rate (SCFM)
06/02/05	System Installation and Test Run. Ozone supply lines were pressurized using compressed air to check for leaks. Any leaks were repaired. Initial system readings was recorded.							
	1.4	1.4	1.7	19.0	0.25	2.9	30	1.0
06/07/05	System Start-up with regulator from the SCDHS present. Ozone injection rate initially set at 0.5 lbs O3/day.							
	NR	NR	0.5	18.0	0.25	NR	33	1.0
06/08/05	Ozone injection rate increased to 0.8 pounds per day because no leaks were detected and the system had been operating as designed.							
	118.6	NR	0.8	18.5	0.26	7.4	30	1.0
06/09/05	141.8	NR	0.8	19.0	0.26	8.8	32	1.0
6/14/2005	Performed 1st weekly groundwater sampling event for monitoring wells MW-5, MW-8 through MW-10.							
	263.3	33.3	NR	18.5	0.27	NR	31	1.0
06/23/05	Performed 2nd weekly groundwater sampling event for monitoring wells MW-5, MW-8 through MW-10.							
06/30/05	Performed 3rd weekly groundwater sampling event for monitoring wells MW-5, MW-8 through MW-10.							
07/08/05	System off upon arrival. Ozone high pressure alarm triggered at 3:32 pm on 7/6/05. Cleared alarm, decreased ozone pressure, and turned system on. Performed 4th weekly groundwater sampling event for monitoring wells MW-5, MW-8 through MW-10.							
	784.5	98.3	0.8	17.5	0.25	NR	30	1.0
07/27/05	1242.1	160.2	0.8	16.5	0.22	80.3	31	1.0
08/09/05	Performed 3rd quarter 2005 QM event. Increased ozone injection rate to 1.1 lbs O3/day to optimized oxidation of petroleum related contaminants in groundwater.							
	1555.7	198.9	1.1	20.0	0.27	99.7	32	1.0
09/07/05	2250.4	284.7	1.2	18.5	0.25	142.6	32	1.0
09/21/05	2587.4	326.3	1.1	16.5	0.22	163.3	30	1.0
10/06/05	2947.2	370.8	1.2	16.5	0.24	185.6	32	1.0

## **Note:**

a = Calculated using the *Ozone Generation Curve* provided by Applied Process Technology.

lbs O3/day = Pounds ozone per day

psi = Pounds square inch

SCFM = Standard cubic foot per minute

SCDHS = Sonoma County Department of Health Services

NR = Not recorded

QM= Quarterly groundwater monitoring and sampling event

---

## **Appendix D**

# **GeoTracker Upload Verifications**

## Electronic Submittal Information

[Main Menu](#) | [View/Add Facilities](#) | [Upload EDD](#) | [Check EDD](#)

### UPLOADING A GEO\_REPORT FILE

#### YOUR DOCUMENT UPLOAD WAS SUCCESSFUL!

**Facility Name:** John's Auto Repair (former)  
**Global ID:** T0609700531  
**Title:** Quarterly Groundwater Monitoring Report, 2nd Qtr 2005  
**Document Type:** Monitoring Report - Quarterly  
**Submittal Type:** GEO\_REPORT  
**Submittal Date/Time:** 9/9/2005 11:13:43 AM  
**Confirmation Number:** 8899137198

[Click here to view the document.](#)

[Back to Main Menu](#)

Logged in as WINZLER (AUTH\_RP)

[CONTACT SITE ADMINISTRATOR](#)

## Electronic Submittal Information

[Main Menu](#) | [View/Add Facilities](#) | [Upload EDD](#) | [Check EDD](#)

Your EDF file has been successfully uploaded!

**Confirmation Number:** 8615206599

**Date/Time of Submittal:** 9/9/2005 11:20:33 AM

**Facility Global ID:** T0609700531

**Facility Name:** John's Auto Repair (former)

**Submittal Title:** Ozone Installation, EDF Report 5061411

**Submittal Type:** Additional Information Report

## Electronic Submittal Information

[Main Menu](#) | [View/Add Facilities](#) | [Upload EDD](#) | [Check EDD](#)

Your EDF file has been successfully uploaded!

**Confirmation Number:** 3063923895

**Date/Time of Submittal:** 9/9/2005 11:22:39 AM

**Facility Global ID:** T0609700531

**Facility Name:** John's Auto Repair (former)

**Submittal Title:** Ozone Installation, EDF Report 5062309

**Submittal Type:** Additional Information Report

## Electronic Submittal Information

[Main Menu](#) | [View/Add Facilities](#) | [Upload EDD](#) | [Check EDD](#)

Your EDF file has been successfully uploaded!

**Confirmation Number:** 5159513950

**Date/Time of Submittal:** 9/9/2005 11:27:26 AM

**Facility Global ID:** T0609700531

**Facility Name:** John's Auto Repair (former)

**Submittal Title:** Ozone Installation, EDF Report 5063003

**Submittal Type:** Additional Information Report



## Electronic Submittal Information

[Main Menu](#) | [View/Add Facilities](#) | [Upload EDD](#) | [Check EDD](#)

Your EDF file has been successfully uploaded!

**Confirmation Number:** 7078157603

**Date/Time of Submittal:** 9/9/2005 11:29:51 AM

**Facility Global ID:** T0609700531

**Facility Name:** John's Auto Repair (former)

**Submittal Title:** Ozone Installation, EDF Report 5070805

**Submittal Type:** Additional Information Report

## Electronic Submittal Information

[Main Menu](#) | [View/Add Facilities](#) | [Upload EDD](#) | [Check EDD](#)

### UPLOADING A GEO\_WELL FILE

Processing is complete. No errors were found!  
Your file has been successfully submitted!

**Submittal Title:** Well Measurement File, 3rd Qtr 2005, Wiggins Property  
**Submittal Date/Time:** 9/9/2005 11:33:47 AM  
**Confirmation Number:** 3872009098

[Back to Main Menu](#)

Logged in as WINZLER (AUTH\_RP)

[CONTACT SITE ADMINISTRATOR.](#)

## Electronic Submittal Information

[Main Menu](#) | [View/Add Facilities](#) | [Upload EDD](#) | [Check EDD](#)

Your EDF file has been successfully uploaded!

**Confirmation Number:** 4518710613

**Date/Time of Submittal:** 10/10/2005 5:58:29 PM

**Facility Global ID:** T0609700531

**Facility Name:** John's Auto Repair (former)

**Submittal Title:** EDF Report 5080906

**Submittal Type:** Additional Information Report